

THE GENUS *PHYSOPLEURELLA* REUTER (HEMIPTERA: HETEROPTERA:
ANTHOCORIDAE) FROM SOUTHEASTERN ASIA

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Abstract.—The flower bug genus *Physopleurella* Reuter 1884 of southeastern Asia is revised. Six species are recognized from this region, including three new species: *P. malayana*, n. sp., *P. nigrifemora*, n. sp., and *P. striata*, n. sp. *Physopleurella armata* Poppius 1909, *P. pessonii* Carayon 1956, and *P. flava* Carayon 1956 are recorded from southeastern Asia for the first time. Keys are provided to distinguish species.

Key Words: Heteroptera, Anthocoridae, Dufouriellini, *Physopleurella*, new species, new records, Southeast Asia

Physopleurella Reuter, belonging to the tribe Dufouriellini, is a small flower bug genus, previously including 13 world species: *P. africana* Carayon 1956; *P. armata* Poppius 1909; *P. australis* Gross 1954; *P. bribiensis* Gross 1954; *P. flava* Carayon 1956; *P. indica* Muraleedharan 1978; *P. loyala* Muraleedharan 1978; *P. mundula* (White 1877); *P. pacifica* Gross 1954; *P. pessonii* Carayon 1956; *P. signata* (Distant 1913); *P. typica* (Distant 1913); *P. vichitravarna* Muraleedharan 1977 (Poppius 1909; Distant 1913; Gross 1954; Carayon 1956; Muraleedharan 1977, 1978; Ford 1979). Members of this genus are distributed predominantly over the tropics and subtropics, including southeastern Asia. The fauna of this region requires a great deal of further investigation. Prior to this study, there were no records of the genus from southeastern Asia, except for *P. indica*, *P. loyala*, and *P. vichitravarna*, from southern India (Muraleedharan 1977, 1978).

Recent surveys in the southeastern Asia by the authors, our colleagues,

and other entomologists have resulted in the recognition of six species in this genus, three of which are new. Here, three new species are described and three previously known species, *P. armata*, *P. pessonii*, and *P. flava*, are first recorded from southeastern Asia. The biology of species of this genus is briefly documented based on our field observations. Keys are provided to assist in distinguishing species.

MATERIALS AND METHODS

Most specimens were preserved in 70% ethyl alcohol, then dried and mounted for observation of their various structures. The examination and illustration of the detailed external structures were made from specimens macerated in 5% hot KOH solution for 3–5 minutes. They were dissected with micro-pins in glycerin on a well glass slide under a Nikon Stereoscopic Zoom Microscope SMZ1500 binocular microscope.

Examined specimens are deposited in the Entomological Laboratory, Osaka

Prefecture University, Sakai (OPU) and the Department of Zoology, National Science Museum, Tokyo (NSMT). All measurements in the text are given in millimeters and terminology for descriptions generally follows Carayon (1972) and Péricart (1972). An asterisk is placed after the name of new localities.

TAXONOMY

Genus *Physopleurella* Reuter

Physopleurella Reuter 1884: 124. Type species: *Cardiastethus mundulus* White, 1877, by monotypy.

Ostorodiasoides Distant 1913: 187. Type species: *Ostorodiasoides typicus* Distant 1913, by original designation. Synonymized by Carayon 1972: 339.

Diagnosis.—Recognized by the following characters: Body oblong ovate, covered with long, silky, reclining setae on dorsum; rostrum short, robust, hardly surpassing anterior margin of prosternum; pronotal callus with longitudinal grooves; ostiolar peritreme curved posteriorly, not joining fine carina which extends to anterior margin of metapleuron; fore femur enlarged, much thicker than mid- and hind femora, bearing series of spines on ventral surface; fore tibia arched, bearing a row of short reclining setae on all of the ventral surface (Reuter 1884, Blatchley 1925, Gross 1954).

Remarks.—*Physopleurella* is apparently a distinct genus and can be distinguished easily from the other genera of the tribe Dufouriellini by the pronotal callus with longitudinal grooves, the enlarged fore femur bearing series of spines on ventral surface, and arched fore tibia, all of which are considered to support the monophyly of the genus.

Biology.—Species of *Physopleurella* are known to be found in dead plant materials, such as dead leaves and branches, banana leaves, harvested stems

and leaves, and the nests of weaverbirds (Usinger 1946; Carayon 1958; Hiura 1959). In Malaysia, most individuals were collected by beating dead-leaf clusters of evergreen trees, together with other Dufouriellini species of the genera such as *Amphiareus* Distant, *Buchaniella* Reuter, and *Cardiastethus* Fieber. Five species, excluding *P. armata*, were found sympatrically in a similar habitat in Selangor, Malaysia, and the largest number of individuals was *P. malayana*. Zimmerman (1948) reported psocids and small leaf hoppers as preys of *P. mundula*. In contrast, Malaysian specimens were collected together with many nymphs and adults of unidentified tuburiferan thrips that possibly serve as prey of *Physopleurella* species.

Physopleurella armata Poppius

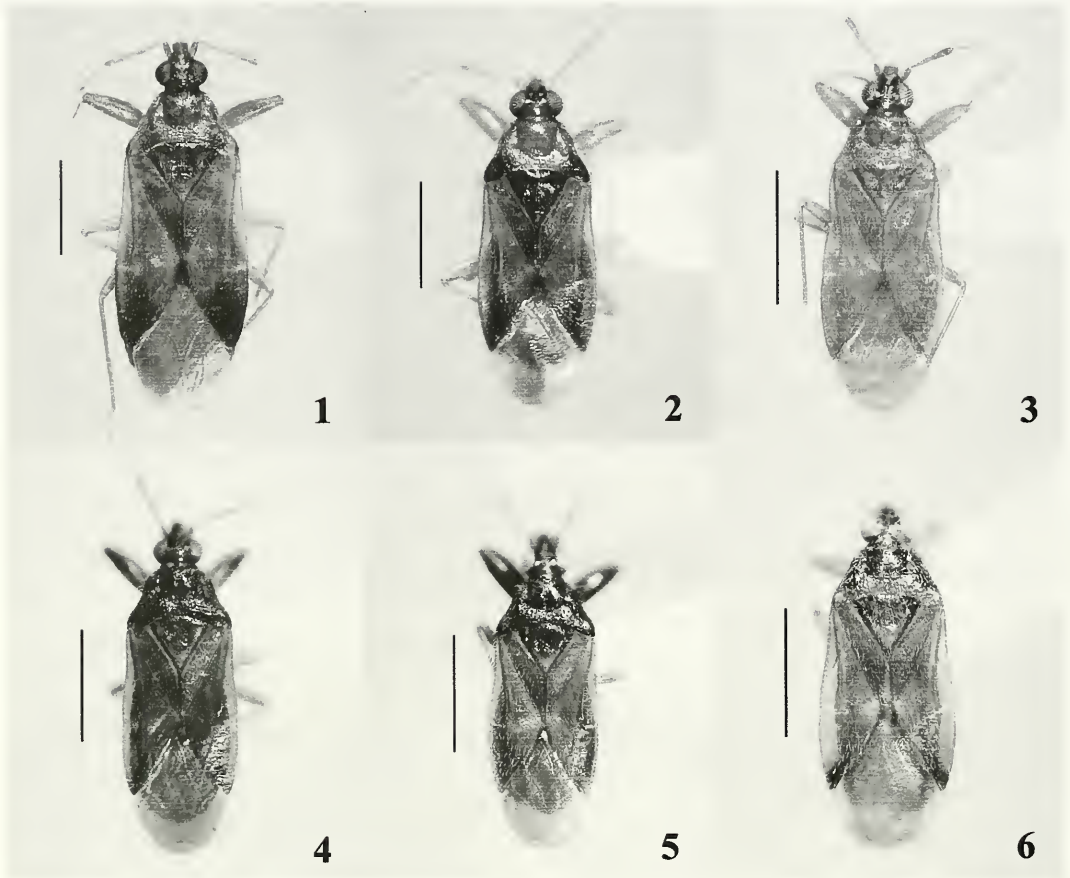
(Figs. 1, 17, 18)

Physopleurella armata Poppius 1909: 12, 13. Syntypes: ♂, Bukenji, Japan; housed in the Hungarian Natural History Museum, Budapest. Haveri, New Guinea; Museo Civico di Storia Naturale "Giacomo Doria," Genoa.

Physopleurella obscura Poppius 1909: 13. Holotype: ♀, Ighibirei, New Guinea; Museo Civico di Storia Naturale "Giacomo Doria," Genoa. Synonymized by Esaki 1926: 170.

Scoloposcelis japonicus Esaki 1931: 263, 264, fig. 4. Holotype: ♂, Fukuoka-Hirao, Japan; Kyushu University, Entomological Collection, Fukuoka. Synonymized by Hiura 1959: 7.

Diagnosis.—Recognized by the following characters: Head (Fig. 1) light brown; vertex tinged with dark brown; antenna pale yellow, with apex of segment I and II dark brown; antennal segment II longer than head width across eyes; rostrum pale yellow; pronotum (Fig. 1) unicolorously yellowish brown; scutellum (Fig. 1) reddish brown to brown; hemelytra (Fig. 1) yellowish



Figs. 1–6. *Physopleurella* spp. in dorsal view. 1, *P. armata*, female. 2, *P. pessonii*, male. 3, *P. flava*, female. 4, *P. malayana*, male, holotype. 5, *P. nigrifemora*, male, holotype. 6, *P. striata*, male, holotype. Scale bars: 1.0 mm.

brown with innermost portion of corium narrowly darkened; cuneus broadly darkened; legs pale yellow; abdomen dark reddish brown; pygophore (Fig. 17) with a nearly straight paramere extending laterad and slightly bent anteriorly at apex.

Measurements [δ (n=7) / ♀ (n=20)]. Body length 3.00–3.25/3.05–4.13; head length (excl. neck) 0.42–0.45/0.40–0.46; head width across eyes 0.47–0.48/0.46–0.54; vertex width 0.18–0.20/0.18–0.20; width between ocelli 0.07–0.08/0.10–0.15; length of antennal segments I–IV 0.14/0.13–0.16, 0.53–0.58/0.44–0.59, 0.34–0.38/0.30–0.39, and 0.31–0.33/0.25–0.35; length of rostral segments II–IV 0.08–

0.09/0.06–0.08, 0.21–0.25/0.21–0.25, and 0.16–0.19/0.16–0.20; anterior pronotal width 0.33–0.35/0.33–0.35; mesal pronotal length 0.43–0.45/0.45–0.50; basal pronotal width 0.90–1.00/0.90–1.10; length of embolial margin 0.92–0.98/0.90–1.13; length of cuneal margin 0.60–0.65/0.64–0.75; maximum width across hemelytra 1.04–1.13/1.02–1.28.

Specimens examined.—VIETNAM: 1 ♀ , Ba Be, 230 m alt., Bac Kan Prov., 12.v.1998, M. Tomokuni (NSMT). 1 ♀ , Trung Yen, 900 m alt., Moc Chau, Son La Prov., 20.vi.1997, light trap, M. Tomokuni (NSMT). 1 ♂ 1 ♀ , Tam Dao, 900 m alt., Vinh Phuc Prov., 17–18.vi.1999, Y. Nakatani (OPU). THAI-

LAND: 1 ♂ 4 ♀, Mae Sa, 400–450 m alt., Mae Rim, Chiang Mai, 1–4.viii.2001, S. Nagashima (OPU); 5 ♂ (Figs. 17, 18) 8 ♀ (Fig. 1), same locality, 15–17.v.2002, T. Ishikawa (OPU); 2 ♀, Mae Sa, 450 m alt., Mae Rim, Chiang Mai, 18.viii.2001, light trap, T. Ishikawa (OPU). 1 ♀, Khao Luang National Park, H. Q., 120 m alt., Nop Pi Tam, Nakhon Si Thammarat, 9.viii.1987, M. Sato (NSMT); 1 ♀, Khao Luang, National Park, H. Q., 450 m alt., Nop Pi Tam, Nakhon Si Thammarat, 6.viii.1997, T. Yamasaki (NSMT). PHILIPPINES: 1 ♀, Puerto Princesa, Palawan Is., 26.viii.1985, M. Sakai (NSMT).

Distribution.—Vietnam*, Thailand*, Philippines*, China (central and southeastern territories), Taiwan, Japan, New Guinea, Australia, Hawaii.

Remarks.—This species was described from Japan and New Zealand by Poppius (1909). It is now known to be widely distributed in eastern Asia and the Australian Region (Cassis and Gross 1995, Péricart 1996, Bu and Zheng 2001). Vietnam, Thailand, and the Philippines represent new distributional records for this species in southeastern Asia.

Physopleurella pessoni Carayon
(Figs. 2, 19, 20)

Physopleurella pessoni Carayon 1956: 104, 106, figs. 1, 2. Holotype: ♂, Adiopodoumé, Côte-d'Ivoire; Muséum National d'Histoire Naturelle, Paris.

Diagnosis.—Recognized by the following characters: Head (Fig. 2) yellowish brown; vertex widely darkened; antenna pale yellow with apex of segment I and II dark brown; antennal segment II about as long as head width across eyes; rostrum pale yellow; pronotum (Fig. 2) yellowish brown with widely darkened posterior angles; scutellum (Fig. 2) dark brown; hemelytra (Fig. 2) yellowish brown, clavus narrowly dark-

ened at apex, cuneus widely darkened; legs unicolorously pale yellow; abdomen blackish brown, laterally yellowish brown; pygophore (Fig. 19) with a short paramere extending laterad, gradually tapering toward apex and slightly constricted near apex.

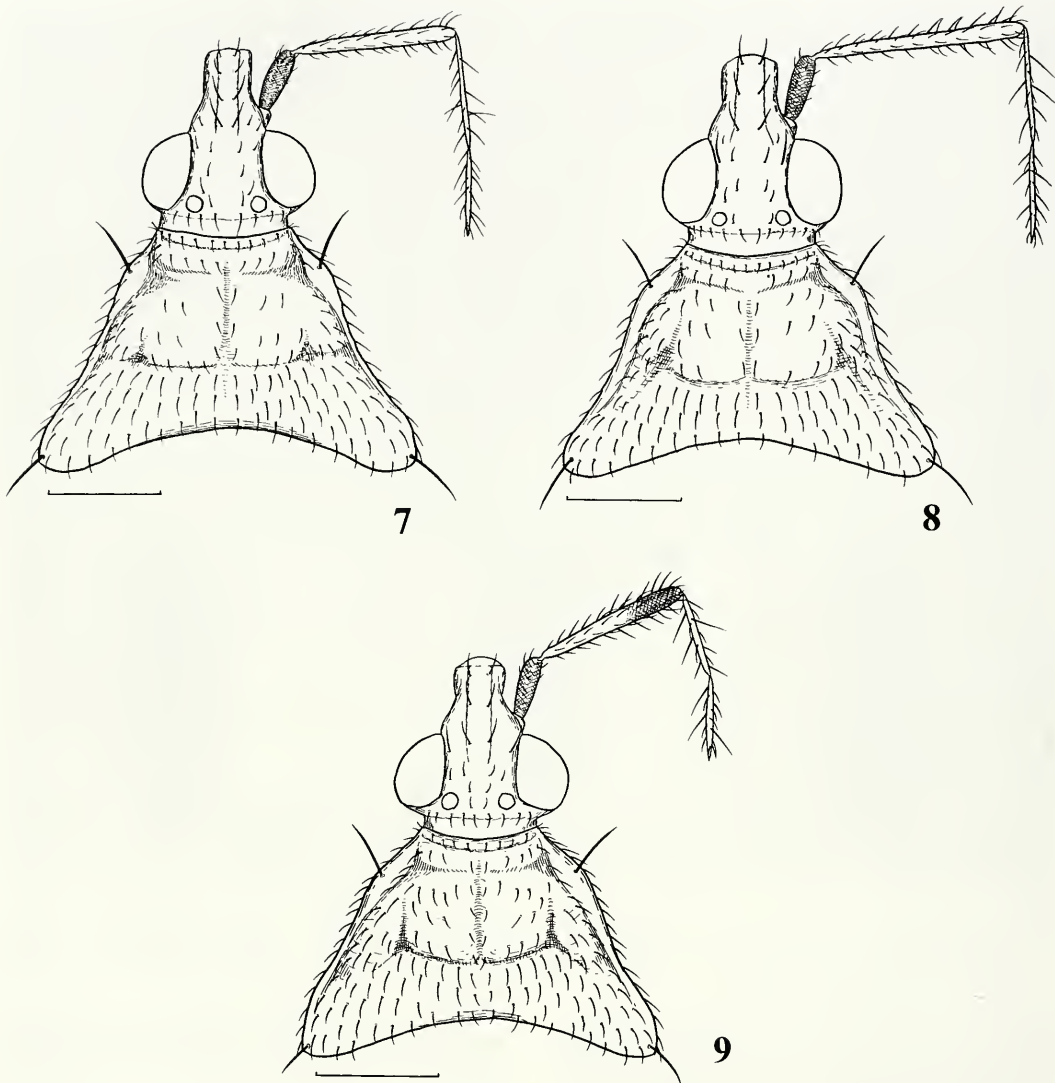
Measurements [♂ (n=2) / ♀ (n=4)]. Body length 2.75/3.18–3.38; head length (excl. neck) 0.40/0.40–0.44; head width across eyes 0.45/0.48–0.50; vertex width 0.17/0.19–0.20; width between ocelli 0.09/0.10–0.12; length of antennal segments I–IV 0.13/0.15–0.16, 0.50/0.50–0.52, 0.31/0.31–0.33, and 0.29/0.29–0.31; length of rostral segments II–IV 0.06/0.08, 0.22/0.23–0.25, and 0.17/0.17–0.19; anterior pronotal width 0.31/0.33–0.34; mesal pronotal length 0.41/0.46–0.48; basal pronotal width 0.85/1.05–1.07; length of embolial margin 0.76/0.90–1.00; length of cuneal margin 0.60/0.68–0.70; maximum width across hemelytra 0.96/1.15–1.20.

Specimens examined.—MALAYSIA: 1 ♂ 2 ♀, Ulu Gombak, Selangor, 9.v.2005, K. Yamada. 1 ♂ (Figs. 2, 19, 20) 1 ♀, nr. Endau-Rompin, Pahang, 12.v.2005, light trap, K. Yamada. 1 ♀, Kampung Peta, Endau-Rompin, Johor, 15.v.2005, light trap, K. Yamada. All in OPU.

Distribution.—Malaysia*, Mauritius (Mascarene Isls.), Madagascar, Cameroon, Côte-d'Ivoire.

Remarks.—*Physopleurella pessoni* was described by Carayon (1956) based on specimens from Côte-d'Ivoire and Cameroon. Subsequently, he recorded this species from Madagascar and Mauritius, together with *P. flava* (Carayon 1958). Malaysia represents a new country record.

The shape of male genitalia and other external structures of specimens from Malaysia agree with those of *pessoni* Carayon, judging from the original description of Carayon (1956). However Malaysian specimens have a rather larger body than those of the African specimens (2.32–2.58 in male, 2.54–3.05 in female).



Figs. 7-9. Heads and pronota in dorsal view. 7, *Physopleurella malayana*, female. 8, *P. nigrifemora*, male. 9, *P. striata*, male, holotype. Scale bars: 0.3 mm.

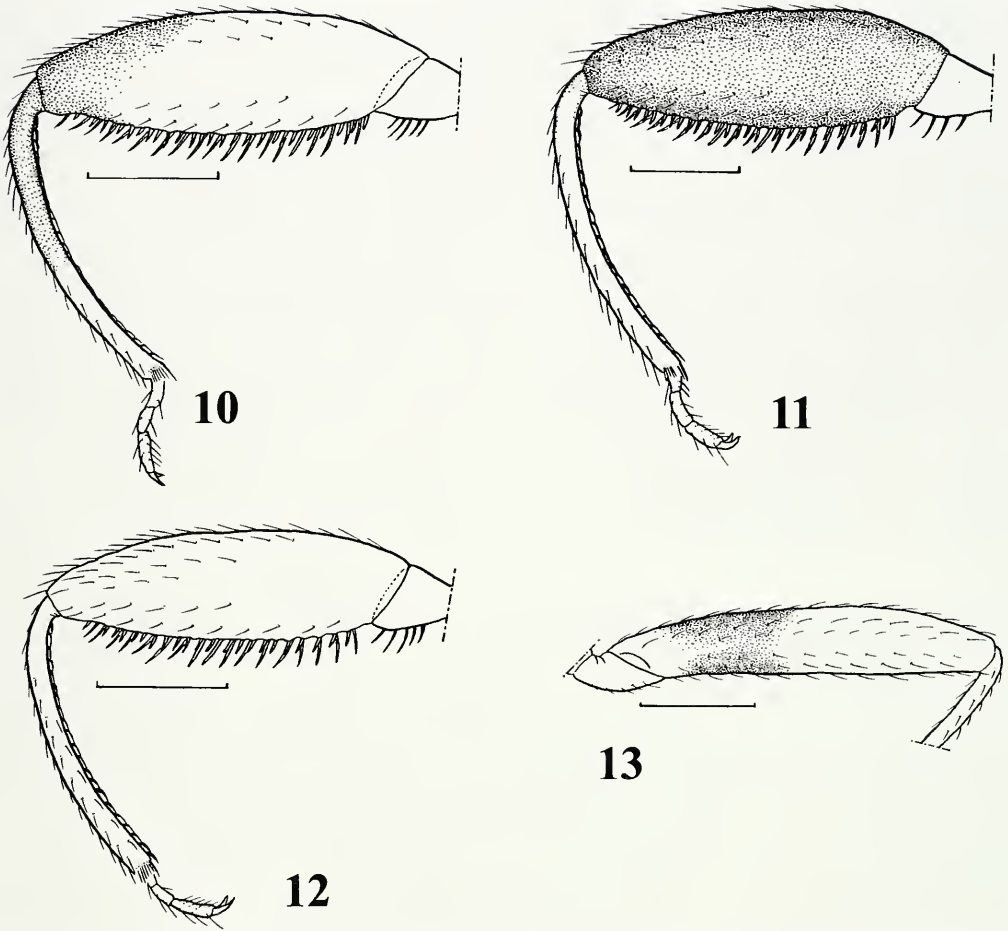
Physopleurella flava Carayon
(Figs. 3, 21, 22)

Physopleurella flava Carayon 1956: 107, 108. Holotype: ♀, Dahomey; Muséum National d'Histoire Naturelle, Paris.

Diagnosis.—Recognized by the following characters: Body (Fig. 3) unicolorously yellowish brown to light brown; antenna pale yellow with segment I slightly darkened; antennal segment II

about as long as head width across eyes; rostrum pale yellow; legs pale yellow to yellowish brown; abdomen brown tinged with fuscous; pygophore (Fig. 21) wide, rounded at bottom, apex of left side with dense, short, stout setae; paramere (Figs. 21, 22) stout, moderately rounded anteriorly, abruptly bent near apex.

Measurements [♂ (n=4) / ♀ (n=14)]. Body length 2.75/2.80–3.08; head length (excl. neck) 0.36–0.37/0.35–0.40; head width across eyes 0.41–0.42/0.41–0.44;



Figs. 10–13. Fore legs (10–12) and hind femur (13). 10, *Physopteurella malayana*, male. 11, *P. nigrifemora*, male. 12, 13, *P. striata*, male. Scale bars: 0.05 mm.

vertex width 0.16–0.18/0.19–0.20; width between ocelli 0.08–0.10/0.13; length of antennal segments I–IV 0.11–0.13/0.11–0.13, 0.41/0.41–0.43, 0.25/0.24–0.25, and 0.25/0.25; length of rostral segments II–IV 0.06–0.08/0.06–0.09, 0.22/0.22–0.23, and 0.17–0.18/0.16–0.20; anterior pronotal width 0.29–0.30/0.30–0.34; mesal pronotal length 0.40–0.42/0.45; basal pronotal width 0.82–0.84/0.90; length of embolial margin 0.80/0.80–0.90; length of cuneal margin 0.60/0.67–0.70; maximum width across hemelytra 0.95–1.00/0.94–1.08.

Specimens examined.—THAILAND: 1♀, Mae Sa, 400–450 m alt., Mae Rim, Chiang Mai, 1–4.viii.2001, S. Naga-

shima; 1♀, same locality, 1.viii.2001, T. Ishikawa; 1♂1♀, same locality, 13.viii.2001, T. Ishikawa; 1♂ (Figs. 21, 22) 5♀ (Fig. 3), 16–17.v.2002, T. Ishikawa. 2♀, Mae Choe, N17-45' E100-01', Uttaradit, Y. Nakatani (without collection date). MALAYSIA: 2♂4♀, Ulu Gombak, Selangor, 8.v.2005, K. Yamada. All in OPU.

Distribution.—Thailand*, Malaysia*, Mauritius (Mascarene Isls.), Madagascar, Congo, Benin, Côte-d'Ivoire.

Remarks.—Previously, this species was known to be widely distributed in tropical Africa. Thailand and Malaysia represent new country records.

According to Carayon (1958), the shape of male genitalia differed very little between the specimens from the Côte-d'Ivoire and those from Mauritius (Mascarene Isls.). Judging from the male genitalia of specimens from Thailand and Malaysia, the shape of the paramere resembles that of the Mauritius specimens. Carayon (1958) indicated that these differences could represent subspecific distinction or geographic variability. Besides the male genitalia, however, no differences in external characters were found between the African and southeastern Asian specimens. Therefore, the male genitalic differences are considered to represent intraspecific variation.

***Physopleurella malayana* Yamada and
Hirowatari, new species**

(Figs. 4, 7, 10, 14, 23, 24)

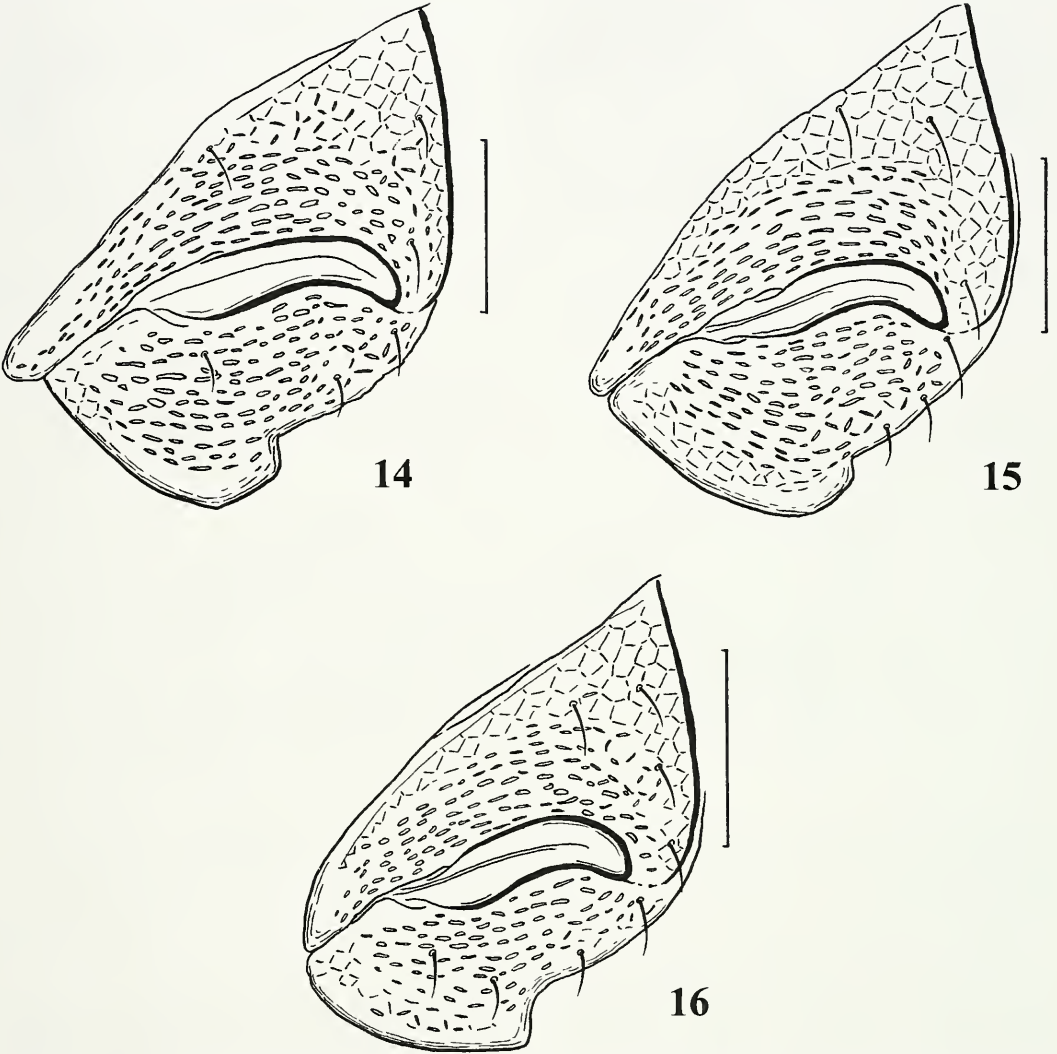
Diagnosis.—Recognized by the following characters: Head (Figs. 4, 7) dark brown; antenna pale yellow, with segment I dark brown; antennal segment II about as long as head width across eyes; pronotum (Fig. 4) dark brown; apical 1/3 of dorsal surface of fore femur (Fig. 10) and basal half of fore tibia (Fig. 10) darkened; abdomen blackish brown; paramere (Figs. 23, 24) stout, bent and swollen at base in lateroposterior view, notched near apex, abruptly acute apically.

Description.—Body (Fig. 4) generally brown. Head (Figs. 4, 7) dark brown, slightly shorter than its width across eyes; dorsal surface shiny, sparsely covered with long, silky, erect setae; anteocular portion about as long as length of the eye; vertex tinged with blackish brown, about 1.3 times as wide as width of eye; ocelli red. Antenna (Figs. 4, 7) pale yellow, covered with yellow, suberect, setae; segment I dark, reaching apex of head; segment II thickened toward apex, about as long as head

width across eyes; segment III about 0.6 times as long as segment II; segment IV slightly shorter than segment III, flattened. Rostrum pale yellow, with sparse, short setae; segment I and II darkened; segment II bearing a pair of long erect setae at base; segment III distinctly swollen, 1.3 times as long as segment IV.

Pronotum (Figs. 4, 7) dark brown, sometimes tinged posteromedially with light brown, shiny, covered with long, silky, reclining setae; collar longitudinally narrow, with some furrows and short setae; anterior margin slightly curved, 0.68 times as long as mesal length; lateral margin slightly sinuate, carinate on anterior 2/3; posterior margin 2.9 times as wide as anterior margin. Scutellum (Fig. 4) paler than color of pronotum, weakly shiny, with two distinct foveae at middle. Hemelytra (Fig. 4) light brown, covered with yellow, reclining setae; cuneus narrowly darkened at apex, sometimes obscure; apical part of corium three times as wide as embolium; cuneal margin about 0.75 times as long as embolial margin; membrane smoky dark brown, with three veins, innermost vein distinctly bifurcated at base, remainder veins slightly curved; venter of thorax blackish brown. Legs pale yellow, densely covered with yellow, short setae; coxa dark brown; apical 1/3 of dorsal surface of fore femur (Fig. 10) and basal half of fore tibia (Fig. 10) darkened; trochanter with 5–6 spine like setae ventrally; fore femur ventrally with two series of spines composed of 18–20 long and 26 short spines. Ostiolar peritreme and evaporative area black to blackish brown, as shown in Fig. 14. Abdomen blackish brown, ventrally with dense, short, silky setae; scissure on abdominal tergite nearly reaching to middle of segment III.

Male genitalia (Figs. 23, 24): Pygophore (Fig. 23) posteroventrally covered with stout setae longer than length of pygophore, bottom of pygophore rounded; paramere (Fig. 23, 24) stout, extend-



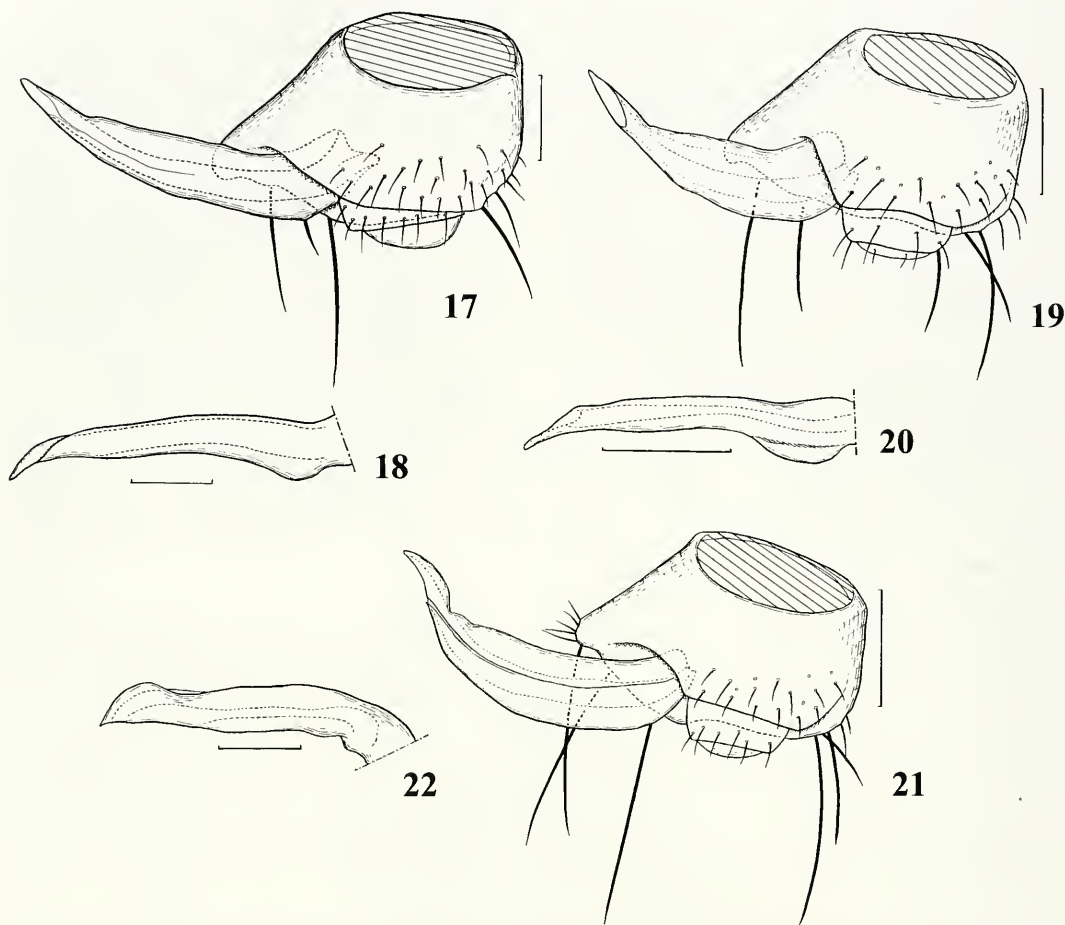
Figs. 14–16. Ostiolar peritremes and evaporative areas in left lateroventral view. 14, *Physopleurella malayana*, male. 15, *P. nigrifemora*, male. 16, *P. striata*, male. Scale bars: 0.1 mm.

ing anteriorly, bent and swollen at base in lateroposterior view, notched near apex, abruptly acute at apex.

Measurements [δ (n=45) / ♀ (n=20)]. Body length 2.55–2.83/2.60–3.25; head length (excl. neck) 0.36–0.40/0.38–0.42; head width across eyes 0.40–0.44/0.42–0.46; vertex width 0.16–0.17/0.17–0.20; width between ocelli 0.09–0.10/0.09–0.12; length of antennal segments I–IV 0.13/0.13–0.15, 0.41–0.44/0.41–0.47, 0.23–0.25/0.25–0.28, and 0.23–0.24/0.25–0.26; length

of rostral segments II–IV 0.05–0.06/0.06–0.07, 0.23–0.25/0.24–0.26, and 0.16–0.19/0.18–0.19; anterior pronotal width 0.30–0.34/0.29–0.31; mesal pronotal length 0.44–0.47/0.43–0.51; basal pronotal width 0.83–0.90/0.90–1.04; length of embolial margin 0.76–0.82/0.73–0.95; length of cuneal margin 0.55–0.63/0.56–0.74; maximum width across hemelytra 0.89–1.00/0.90–1.14.

Holotype.— δ (with glass slide No. OPU-KY135 for genitalia), “MA-



Figs. 17–22. Male genitalia. 17, 18, *Physopleurella armata*. 19, 20, *P. pessoni*. 21, 22, *P. flava*. 17, 19, 21, Pygophores in dorsal view. 18, 20, 22, Parameres in posterior view. Scale bars: 0.05 mm.

LAYSIA, Selangor, Ulu Gombak, 9.v.2005, K. Yamada” (OPU).

Paratypes.—MALAYSIA: 43 ♂ (Figs. 10, 14) 19 ♀ (Fig. 7), same locality as for holotype, 7–10.v.2005, K. Yamada; 1 ♂, same data as for holotype. 1 ♀, Kampung Peta, Endau-Rompin, Johor, 14.v.2005, K. Yamada. All in OPU.

Distribution.—Malaysia.

Etymology.—Named after the type locality, Malaysia; an adjective.

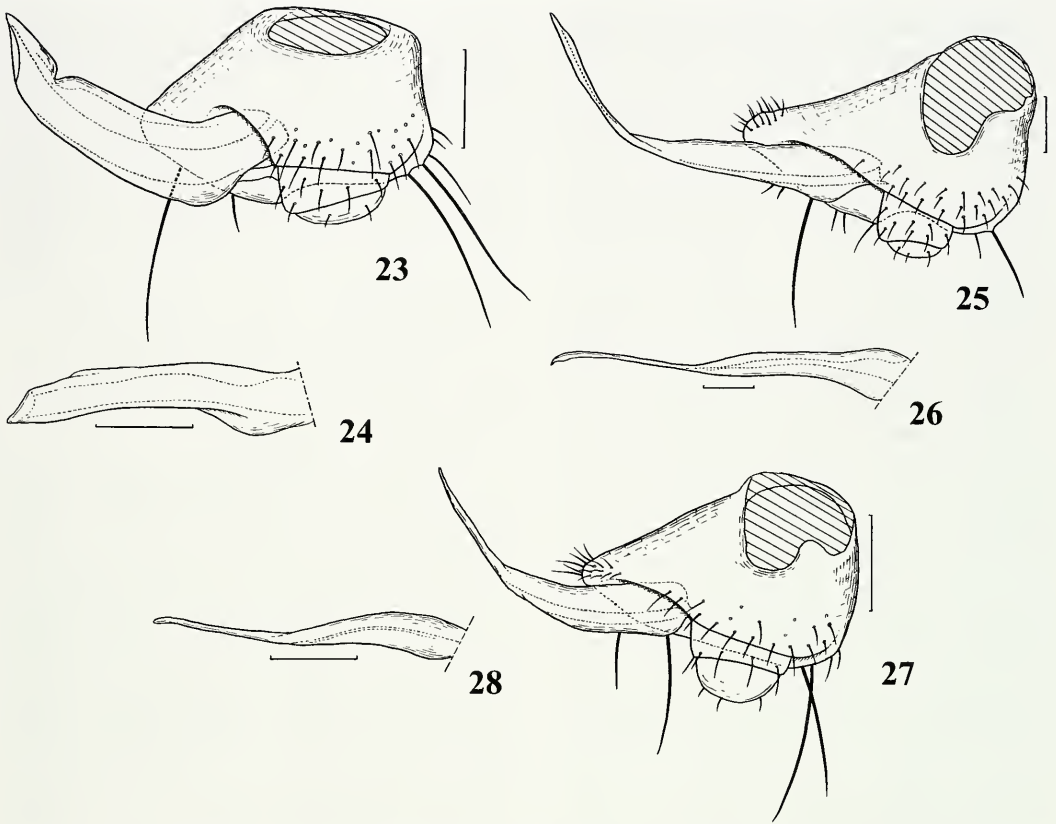
Remarks.—In general, habitus of this new species is allied to *P. africana* from Cameroon. It may be distinguished from the latter by the larger body size (male: 2.28; female: 2.33 in *P. africana*); the antennal segment II as long as head width

across eyes (definitely shorter than head width across eyes in *P. africana*); the innermost vein of membrane distinctly bifurcate at base (not bifurcate in *P. africana*); the darkened apical 1/3 of dorsal surface of fore femur and basal half of fore tibia (brown or clear yellow femur and tibia in *P. africana*); and the stout paramere notched near apex and abruptly acute at apex (gradually acute toward apex in *P. africana*).

***Physopleurella nigrifemora* Yamada and Hirowatari, new species**

(Figs. 5, 8, 11, 15, 25, 26)

Diagnosis.—Recognized by the following characters: Head (Figs. 5, 8)



Figs. 23–28. Male genitalia. 23, 24, *Physopleurella malayana*, holotype (glass slide No. OPU-KY135). 25, 26, *P. nigrifemora*, holotype (glass slide No. OPU-KY137). 27, 28, *P. striata*, holotype (glass slide No. OPU-KY141). 23, 25, 27, Pygophores in dorsal view. 24, 26, 28, Parameres in posterior view. Scale bars: 0.05 mm.

black to brownish black; antenna pale yellow with segment I entirely darkened; antennal segment II apically tinged with fuscous, about 1.2 times as long as head width across eyes; pronotum (Fig. 5) unicolorously black; femur (Fig. 11) entirely black or brownish black; abdomen overall blackish brown, with central area pale brown; paramere (Figs. 25, 26) slender, extending laterally and abruptly bent anteriorly near middle, gradually tapered toward apex in posterior view.

Description.—Body (Fig. 5) brown to blackish brown. Head (Figs. 5, 8) black to brownish black, 0.92 times as long as width across eyes; dorsal surface shiny, sparsely covered with long, silky, erect setae and small punctures; antecular

portion as long as length of eye; vertex 1.28 times as wide as width of eye; ocelli red; neck tinged with pale brown. Antenna (Figs. 5, 8) pale yellow, slender, covered with yellow, suberect setae; segment I entirely darkened, reaching apex of head; segment II apically tinged with fuscous, slightly thickened toward apex, about 1.2 times as long as head width across eyes; segment III 0.55 times as long as segment II; segment IV slightly shorter than segment III, weakly flattened. Rostrum pale yellow, with sparse short setae; segment I to and basal of II darkened; segment II bearing a pair of long erect setae at base; segment III distinctly swollen, about 1.2 times as long as segment IV.

Pronotum (Figs. 5, 8) uniformly black, densely covered with long, silky, reclining setae; and small punctures; anterior margin slightly curved, about 0.7 times as long as mesal length; lateral margin sinuate, strongly carinate on anterior half; posterior margin three times as wide as anterior margin. Scutellum (Fig. 5) dark with apex paler, sometimes pale brown, with two distinct foveae at middle. Hemelytra (Fig. 5) unicolorously pale brown, densely covered with yellow, reclining setae; apical portion of corium about 2.7 times as wide as embolium; cuneal margin 0.75 times as long as embolial margin; membrane dark ochre, narrowly darkened at base, with three veins, innermost vein distinctly bifurcated at base, remaining veins slightly curved; venter of thorax black to blackish brown. Legs densely covered with short, silky setae; coxa mostly dark brown; trochanter, tibia, and tarsus pale yellow; trochanter with 5–6 spine-like setae ventrally; femur (Fig. 11) entirely black or brownish black, venter with two series of spines composed of 18–19 long and 27 short spines. Ostiolar peritreme and evaporative area black, as shown in Fig. 15. Abdomen overall blackish brown, with central area pale brown, ventrally with short, silky setae; scissure on abdominal tergite nearly reaching to middle of segment III.

Male genitalia (Figs. 25, 26): Pygophore (Fig. 25) strongly narrowed at base, basal opening very wide, strongly produced on left margin and bearing dense, short setae; paramere (Figs. 25, 26) slender, extending laterally and abruptly bent anteriorly near middle, gradually tapered toward apex in posterior view.

Measurements [δ (n=9) / f (n=5)]. Body length 2.88–3.20/2.85–3.13; head length (excl. neck) 0.43–0.45/0.40–0.46; head width across eyes 0.46–0.49/0.44–0.49; vertex width 0.19–0.20/0.18–0.20; width between ocelli 0.10–0.11/0.11–0.14; length of antennal segments I–IV 0.14–0.16/0.14–0.16, 0.50–

0.55/0.51–0.54, 0.30–0.31/0.28, and 0.28/0.26; length of rostral segments II–IV 0.08/0.08, 0.25/0.26, and 0.19/0.22; anterior pronotal width 0.32–0.36/0.30–0.36; mesal pronotal length 0.46–0.54/0.45–0.53; basal pronotal width 0.95–1.02/0.92–1.05; length of embolial margin 0.85–0.90/0.85–1.00; length of cuneal margin 0.64–0.68/0.62–0.75; maximum width across hemelytra 1.00–1.15/1.07–1.25.

Holotype.— δ (with glass slide No. OPU-KY137 for genitalia), “MALAYSIA, Selangor, Ulu Gombak, 10.v.2005, K. Yamada” (OPU).

Paratypes.—VIETNAM: 1 δ 2 f , Dhu An, Tan Phu, Dong Nai Prov., 29.xii.2001, T. Ishikawa (OPU). MALAYSIA: 5 δ (Figs. 8, 11, 15), same locality as for holotype, 7-8.v.2005, K. Yamada (OPU). 1 δ 1 f , Batu Niah, Sarawak, 12.xii.1968, M. Sato (NSMT-I-He 7811 and 7813); 1 f , same locality, 15.xii.1968, M. Sato (NSMT-I-He 7812). PHILIPPINES: 1 f , Bagio, 1440 m alt., Benguet Prov., Luzon Is., 28.vii.1985, M. Sakai (NSMT-I-He 7814); 1 δ , Eagle Centre, 1100 m alt., Baracatan, north slope of Mt. Apo, Mindanao Is., 7.viii.1985, M. Sakai (NSMT-I-He 7815).

Distribution.—Vietnam, Malaysia, Philippines.

Etymology.—From Latin *nigra* (= black) in combination with *femora* (= femur), referring to the entirely blackish brown femora.

Remarks.—This new species is similar to *P. malayana*, from which it can be distinguished easily from the latter by the black to brownish black head and pronotum; the antennal segment II being 1.2 times as long as head width across eyes; the unicolorously pale brown hemelytra; the entirely black or brownish black femora; the pygophore being strongly narrowed at base, with strongly produced at its left margin and bearing dense short setae; and the paramere extending laterally and abruptly bent anteriorly near middle. The male genitalia

lia somewhat resemble those of *P. mundula* from Pacific islands, southern part of America, and Central America, but *P. nigrifemora* differs from it in the general coloration and the paramere is abruptly bent anteriorly near middle (nearly straight but curving anteriorly at the tip in *P. mundula*).

***Physopleurella striata* Yamada and
Hirowatari, new species**

(Figs. 6, 9, 12, 13, 16, 27, 28)

Diagnosis.—Recognized by the following characters: Head (Figs. 6, 9) dark brown, with pale brown apex and neck; antenna yellowish brown, with segment I darkened; antennal segment II apically tinged with dark brown, slightly shorter than width of head across eyes; pronotum (Fig. 6) dark brown, broadly pale brown posterior margin; hemelytra (Fig. 6) yellowish brown, with cuneus narrowly darkened at apex; hind femur (Fig. 13) pale brown with darkened annulation basally; paramere (Figs. 27, 28) long, slender, anteriorly curved, abruptly narrowing at apical 1/3.

Description.—Body (Fig. 6) generally brown. Head (Figs. 6, 9) dark brown, with apex and neck pale brown, 0.89 times as long as width across eyes; dorsal surface roughened, clothed with long, silky, erect setae; antecular portion slightly shorter than length of eye; vertex about 1.4 times as wide as eye; ocelli red, large. Antenna (Figs. 6, 9) yellowish brown, sparsely clothed with yellow, suberect setae; segment I dark, reaching apex of head, apically with short setae; segment II apically tinged with dark brown, thickened toward apex, slightly shorter than head width across eyes; segment III 0.58 as long as segment II; segment IV equal to segment III, slightly flattened. Rostrum pale yellow, with sparse short setae; segment I to II darkened; segment II with a pair of long erect setae at base; segment III about 1.2 times as long as segment IV.

Pronotum (Figs. 6, 9) dark brown, broadly pale brown posterior margin, shiny, densely clothed with long, reclining, yellow setae and small punctures; anterior margin nearly straight, 0.72 times as long as mesal length; lateral margin nearly straight, carinate on anterior 2/3; posterior margin 2.8 times as wide as anterior margin. Scutellum (Fig. 6) yellowish brown, with two distinct foveae at middle. Hemelytra (Fig. 6) yellowish brown, cuneus narrowly darkened at apex, clothed with long, reclining, yellow setae; apical part of corium slightly wider than 2.5 times of that of embolium; cuneal margin 0.8 times as long as embolial margin; membrane smoky ochre, with three veins, innermost vein distinctly bifurcated at base, other veins slightly curved; venter of thorax blackish brown. Legs pale yellow, densely pubescent; coxa tinged with dark brown; fore tibia (Fig. 12) tinged with dark brown at base; hind femur (Fig. 13) pale brown with a darkened annulation basally; trochanter with 4–5 spine-like setae ventrally; fore femur ventrally with two series of spines composed of 15–16 long and 22–23 short spines. Ostiolar peritreme and evaporative area reddish brown, as shown in Fig. 16. Abdomen blackish brown, centrally and laterally pale brown, ventrally clothed with dense reclining setae; scissure on abdominal tergite nearly reaching to middle of segment III.

Male genitalia (Figs. 27, 28): Pygophore (Fig. 27) strongly narrowed at base, very wide at basal opening, left margin produced, apex of left side bearing dense, short, stout setae; paramere (Fig. 28) long, slender, anteriorly curved, abruptly narrowing at apical 1/3.

Measurements [δ (n=7) / ♀ (n=1)]. Body length 2.63–2.80/2.83; head length (excl. neck) 0.36–0.38/0.36; head width across eyes 0.41–0.42/0.41; vertex width 0.17–0.18/0.18; width between ocelli 0.10–0.12/0.10; length of antennal segments I–IV 0.11–0.12/0.11, 0.38–0.39/

0.39, 0.22–0.23/0.23, and 0.22–0.23/0.23; length of rostral segments II–IV 0.05–0.06/0.06, 0.20–0.21/0.22, and 0.17–0.18/0.18; anterior pronotal width 0.30–0.32/0.30; mesal pronotal length 0.42–0.44/0.42; basal pronotal width 0.86–0.87/0.87; length of embolial margin 0.78–0.81/0.80; length of cuneal margin 0.62–0.64/0.65; maximum width across hemelytra 0.98–1.02/1.02.

Holotype.—♂ (with glass slide No. OPU-KY141 for genitalia), “MALAYSIA, Selangor, Ulu Gombak, 11.v.2005, K. Yamada” (OPU).

Paratypes.—MALAYSIA: 6♂ (Figs. 12, 13, 16) 1♀, same locality as for holotype, 8–11.v.2005, K. Yamada. All in OPU.

Distribution.—Malaysia.

Etymology.—From Latin *striata* (= striate), referring to broad, pale brown posterior margin of the pronotum; an adjective.

Remarks.—This new species is closely similar to *P. malayana* in general appearance and coloration. It may be distinguished from the latter by the broad, pale brown posterior margin of the pronotum; the unicolorously pale yellow femur; the pale brown hind femur with a darkened annulation basally; the apex of left side with dense, short, stout setae; and the rather longer and slender paramere abruptly narrowing at apical 1/3. This new species is also similar to *P. nigrifemora*, based on the male genitalia, but it is distinguished from *P. nigrifemora* by the coloration of head, pronotum, and legs, and the shorter paramere.

KEY TO SOUTHEASTERN ASIAN SPECIES OF *PHYSOPLEURELLA*

Coloration

1. Head and pronotum unicolorous or mostly black or dark brown (Figs. 4–6); antennal segment I entirely darkened (Figs. 7–9) . . . 2
- Head and pronotum mostly brown to pale yellow (Figs. 1–3); antennal segment I not entirely darkened, brown or pale yellow . . . 4

2. Cuneus not darkened at apex; femora entirely black or brownish black (Fig. 11) *P. nigrifemora*, n. sp.
- Cuneus narrowly darkened at apex; femora pale yellow or only partly darkened (Figs. 10, 12) 3
3. Apical 1/3 of dorsal surface of fore femur and basal half of fore tibia darkened (Fig. 10); hind femur without a darkened basal annulation *P. malayana*, n. sp.
- Fore femur and tibia uniformly brown to pale brown (Fig. 12); hind femur with a darkened basal annulation (Fig. 13) *P. striata*, n. sp.
4. Scutellum and hemelytra uniformly yellowish brown or pale brown (Fig. 3) *P. flava*
- Scutellum reddish brown or dark brown (Figs. 1, 2); hemelytra yellowish brown with extensively darkened cuneus (Figs. 1, 2) 5
5. Pronotum with widely darkened posterior angles (Fig. 2); abdomen overall blackish brown with laterally areas yellowish brown *P. pessonii*
- Pronotum without darkened posterior angles (Fig. 1); abdomen uniformly dark reddish brown *P. armata*

Morphological Characters

1. Antennal segment II longer than head width across eyes (Fig. 8) 2
- Antennal segment II about as long as or shorter than head width across eyes (Figs. 7, 9) 3
2. Paramere nearly straight, extending laterad (Figs. 17, 18) *P. armata*
- Paramere slender, abruptly bent anteriorly near middle (Figs. 25, 26) *P. nigrifemora*, n. sp.
3. Pygophore with dense, short setae on produced left margin (Figs. 21, 27) 4
- Pygophore without dense, short setae on produced left margin (Figs. 19, 23) 5
4. Paramere stout, moderately rounded anteriorly, abruptly bent near apex (Figs. 21, 22) *P. flava*
- Paramere slender, anteriorly curved, abruptly narrowing at apical 1/3 (Fig. 28) *P. striata* n. sp.
5. Paramere gradually tapering toward apex, extending laterad, slightly constricted near apex (Figs. 19, 20) *P. pessonii*
- Paramere stout, extending anteriorly, notched near apex, abruptly acute at apex (Fig. 23, 24) *P. malayana*, n. sp.

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